MIDI Implementation

This document is the common MIDI implementation for the devices listed below.

- LX-17
- LX-7
- HP605
- HP603
- KF-10
- GP607
- DP603
- HP603A
- HP601
- RP102
- FP-10

Model: LX-17 / LX-7 / HP605 / HP603 / KF-10 / GP607 / DP603 / HP603A / HP601 / RP102 / FP-10
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1. Receive Data

■ Channel Voice Messages

● Note Off

Status	2nd byte	3rd byte
8nH	kkH	vvH
9nH	kkH	00H

n = MIDI channel number: 0H–FH (ch.1–ch.16)
kk = note number: 00H–7FH (0–127)
vv = note off velocity: 00H–7FH (0–127)

* For the drum part, this message is not received by certain instruments.

● Note On

Status	2nd byte	3rd byte
9nH	kkH	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
kk = note number: 00H–7FH (0–127)
vv = note on velocity: 01H–7FH (1–127)

● Control Change

* The value specified by a Control Change message will not be reset even by a Program Change, etc.

○ Bank Select (Controller Number 0, 32)

Status	2nd byte	3rd byte
BnH	00H	mmH
BnH	20H	llH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
mm, ll = Bank number: 00H, 00H–7FH, 7FH (bank.1–bank.16384), Initial Value = 00 00H (bank.1)

* If "GM1 System On" is received, Bank Select is not received.
* Bank Select is transmitted at power-on and when "GM2 System On" is received.
* Bank Select processing will be suspended until a Program Change message is received.

○ Modulation (Controller Number 1)

Status	2nd byte	3rd byte
BnH	01H	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Modulation depth: 00H–7FH (0–127)

* The resulting effect is determined by System Exclusive messages. With the initial settings, this is Pitch Modulation Depth.

○ Portamento Time (Controller Number 5)

Status	2nd byte	3rd byte
BnH	05H	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Portamento Time: 00H–7FH (0–127), Initial value = 00H (0)

* This adjusts the rate of pitch change when Portamento is ON or when using the Portamento Control. A value of 0 results in the fastest change.

○ Data Entry (Controller Number 6, 38)

Status	2nd byte	3rd byte
BnH	06H	mmH
BnH	26H	llH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
mm, ll = the value of the parameter specified by RPN
mm = MSB, ll = LSB

○ Volume (Controller Number 7)

Status	2nd byte	3rd byte
BnH	07H	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Volume: 00H–7FH (0–127), Initial Value = 64H (100)

* Volume messages are used to adjust the volume balance of each Part.

○ Pan (Controller Number 10)

Status	2nd byte	3rd byte
BnH	0AH	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = pan: 00H–40H–7FH (Left–Center–Right), Initial Value = 40H (Center)

* For Rhythm Parts, this is a relative adjustment of each Instrument's pan setting.
* Some Tones might not be capable of being panned all the way to the left or right, or might not be able to respond to this message.

○ Expression (Controller Number 11)

Status	2nd byte	3rd byte
BnH	0BH	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Expression: 00H–7FH (0–127), Initial Value = 7FH (127)

* This adjusts the volume of a Part. It can be used independently from Volume messages. Expression messages are used for musical expression within a performance; e.g., expression pedal movements, crescendo and decrescendo.

○ Hold 1 (Controller Number 64)

Status	2nd byte	3rd byte
BnH	40H	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Control value: 00H–7FH (0–127)

○ Portamento (Controller Number 65)

Status	2nd byte	3rd byte
BnH	41H	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Control value : 00H–7FH (0–127)
0–63 = OFF, 64–127 = ON

○ Sostenuto (Controller Number 66)

Status	2nd byte	3rd byte
BnH	42H	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Control value: 00H–7FH (0–127)
0–63 = OFF, 64–127 = ON

○ Soft (Controller Number 67)

Status	2nd byte	3rd byte
BnH	43H	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Control value: 00H–7FH (0–127)

* Some Tones will not exhibit any change.

○ Resonance (Controller Number 71)

Status	2nd byte	3rd byte
BnH	47H	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv= Resonance value (relative change): 00H–7FH(-64–0–+63), Initial value = 40H (no change)

* Some Tones will not exhibit any change.

○ Release Time (Controller Number 72)

Status	2nd byte	3rd byte
BnH	48H	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Release Time value (relative change): 00H–7FH(-64–0–+63), Initial value = 40H (no change)

* Some Tones will not exhibit any change.

○ Attack Time (Controller Number 73)

Status	2nd byte	3rd byte
BnH	49H	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Attack time value (relative change): 00H–7FH(-64–0–+63), Initial value=40H (no change)

* Some Tones will not exhibit any change.

○ Cutoff (Controller Number 74)

Status	2nd byte	3rd byte
BnH	4AH	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Cutoff value (relative change): 00H–7FH(-64–0–+63), Initial value = 40H (no change)

* Some Tones will not exhibit any change.

○ Decay Time (Controller Number 75)

Status	2nd byte	3rd byte
BnH	4BH	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Decay Time value (relative change): 00H–7FH(-64–0–+63), Initial value = 40H (no change)

* Some Tones will not exhibit any change.

○ Vibrato Rate (Controller Number 76)

Status	2nd byte	3rd byte
BnH	4CH	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Vibrato Rate value (relative change): 00H–7FH(-64–0–+63), Initial value = 40H (no change)

* Some Tones will not exhibit any change.

○ Vibrato Depth (Controller Number 77)

Status	2nd byte	3rd byte
BnH	4DH	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Vibrato Depth Value (relative change): 00H–7FH(-64–0–+63),
Initial Value = 40H (no change)

* Some Tones will not exhibit any change.

○ Vibrato Delay (Controller Number 78)

Status	2nd byte	3rd byte
BnH	4EH	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Vibrato Delay value (relative change): 00H–7FH(-64–0–+63),
Initial value=40H (no change)

* Some Tones will not exhibit any change.

○ Effect 1 (Reverb Send Level) (Controller Number 91)

Status	2nd bytes	3rd byte
BnH	5BH	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Control value : 00H–7FH (0–127), Initial Value = 28H (40)

* This message adjusts the Reverb Send Level of each Part.

○ Effect 3 (Chorus Send Level) (Controller Number 93)

Status	2nd byte	3rd byte
BnH	5DH	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Control value: 00H–7FH (0–127), Initial Value = 00H (0)

* This message adjusts the Chorus Send Level of each Part.

○ RPN MSB/LSB (Controller Number 100, 101)

Status	2nd byte	3rd byte
BnH	65H	mmH
BnH	64H	llH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
mm = upper byte (MSB) of parameter number specified by RPN
ll = lower byte (LSB) of parameter number specified by RPN

* The value specified by RPN will not be reset even by messages such as Program Change or Reset All Controller.

RPN
The RPN (Registered Parameter Number) messages are expanded control changes, and each function of an RPN is described by the MIDI Standard.
To use these messages, you must first use RPN MSB and RPN LSB messages to specify the parameter to be controlled, and then use Data Entry messages to specify the value of the specified parameter. Once an RPN parameter has been specified, all Data Entry messages received on that channel will modify the value of that parameter. To prevent accidents, it is recommended that you set RPN Null (RPN Number = 7FH 7FH) when you have finished setting the value of the desired parameter. Refer to Section 4. "Examples of actual MIDI messages" <Example 4>

On this instrument, RPN can be used to modify the following parameters.

RPN MSB LSB	Data entry MSB LSB	Explanation
00H 00H	mmH ---	Pitch Bend Sensitivity mm: 00H–18H (0–24 semitones), Initial Value = 02H (2 semitones) ll: ignored (processed as 00h) specify up to 2 octaves in semitone steps
00H 01H	mmH llH	Master Fine Tuning mm, ll: 00 00H–40 00H–7F 7FH (-100–0–+99.99 cents), Refer to 4. Supplementary Material, "About Tuning"
00H 02H	mmH ---	Master Coarse Tuning mm: 00H–40H–7FH (-64–0–+63 semitones), ll: ignored (processed as 00h)
00H 05H	mmH llH	Modulation Depth Range mm: 00H–04H (0–4 semitones) ll: 00H–7FH (0–100 cents) 100/128 Cent/Value
7FH 7FH	--- ---	RPN null Set a condition in which RPN is not specified. The data entry messages after set RPN null will be ignored. (No Data entry messages are required after RPN null). Settings already made will not change. mm, ll: ignored

●Program Change

Status	2nd byte
CnH	ppH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
pp = Program number: 00H–7FH (prog.1–prog.128)

* The sound will change beginning with the next note-on after the Program Change is received.

●Channel Pressure

Status	2nd byte
DnH	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Channel Pressure : 00H–7FH (0–127)

* The resulting effect is determined by System Exclusive messages. With the initial settings there will be no effect.

●Pitch Bend Change

Status	2nd byte	3rd byte
EnH	llH	mmH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
mm, ll = Pitch Bend value: 00 00H–40 00H–7F 7FH
(-8192–0–+8191)

* The resulting effect is determined by System Exclusive messages. With the initial settings the effect is Pitch Bend.

■ Channel Mode Messages

●All Sounds Off (Controller Number 120)

Status	2nd byte	3rd byte
BnH	78H	00H

n = MIDI channel number: 0H–FH (ch.1–ch.16)

* When this message is received, all currently-sounding notes on the corresponding channel will be turned off immediately.

●Reset All Controllers (Controller Number 121)

Status	2nd byte	3rd byte
BnH	79H	00H

n = MIDI channel number: 0H–FH (ch.1–ch.16)

* When this message is received, the following controllers will be set to their reset values.

Controller	Reset value
Pitch Bend Change	±0 (Center)
Channel Pressure	0 (off)
Modulation	0 (off)
Expression	127 (max)
Hold 1	0 (off)
Portamento	0 (off)
Sostenuto	0 (off)
Soft	0 (off)
RPN	unset; previously set data will not change

●All Notes Off (Controller Number 123)

Status	2nd byte	3rd byte
BnH	7BH	00H

n = MIDI channel number: 0H–FH (ch.1–ch.16)

* When All Notes Off is received, all notes on the corresponding channel will be turned off.
  However if Hold 1 or Sostenuto is ON, the sound will be continued until these are turned off.

●OMNI OFF (Controller Number 124)

Status	2nd byte	3rd byte
BnH	7CH	00H

n = MIDI channel number: 0H–FH (ch.1–ch.16)

* The same processing will be carried out as when All Notes Off is received.

●OMNI ON (Controller Number 125)

Status	2nd byte	3rd byte
BnH	7DH	00H

n = MIDI channel number: 0H–FH (ch.1–ch.16)

* OMNI ON is only recognized as "All notes off"; the Mode doesn't change (OMNI OFF remains).

●MONO (Controller Number 126)

Status	2nd byte	3rd byte
BnH	7EH	mmH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
mm = mono number : 01H (1)

* The same processing will be carried out as when All Notes Off is received, and the corresponding channel will be set to Mode 4 (M=1). Only M=1 is supported.

●POLY (Controller Number 127)

Status	2nd byte	3rd byte
BnH	7FH	00H

n = MIDI channel number: 0H–FH (ch.1–ch.16)

* The same processing will be carried out as when All Notes Off is received, and the corresponding channel will be set to Mode 3.

■ System Exclusive Message

Status	Data byte	Status
F0H	iiH, ddH, ..., eeH	F7H

F0H: System Exclusive Message status
ii = ID number: An ID number (manufacturer ID) to indicate the manufacturer whose Exclusive message this is. Roland's manufacturer ID is 41H. ID numbers 7EH and 7FH are extensions of the MIDI standard; Universal Non-realtime Messages (7EH) and Universal Realtime Messages (7FH).
dd,...,ee = data: 00H–7FH (0–127)
F7H: EOX (End Of Exclusive)

The System Exclusive Messages received by this instrument are; messages related to mode settings, Universal Realtime System Exclusive messages, and Universal Non-realtime System Exclusive messages.

●System Exclusive Messages Related to Mode Settings

These messages are used to initialize a device to GM mode.
When creating performance data, you should insert "GM1 System On" at the beginning of a GM1 score, or "GM2 System On" at the beginning of a GM2 score. However, each song should contain only the single mode message that is appropriate for that song. (Do not insert multiple mode setting messages in the same song.)
"GM System On" uses Universal Non-realtime Message format.

○ GM1 System On

This is a command message that resets the internal settings of the unit to the General MIDI initial state (General MIDI System-Level 1). After receiving this message, this instrument will automatically be set to the proper condition for correctly playing a GM1 score.

Status	Data byte	Status
F0H	7EH, 7FH, 09H, 01H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
7FH	Device ID (Broadcast)
09H	Sub ID#1 (General MIDI Message)
01H	Sub ID#2 (General MIDI 1 On)
F7H	EOX (End Of Exclusive)

* Once this message is received, Bank Select is no longer received.
* There must be an interval of at least 50 ms between this message and the next.

○ GM2 System On

This is a command message that resets the internal settings of the unit to the General MIDI initial state (General MIDI System-Level 2). After receiving this message, this instrument will automatically be set to the proper condition for correctly playing a GM2 score.

Status	Data byte	Status
F0H	7EH 7FH 09H 03H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
7FH	Device ID (Broadcast)
09H	Sub ID#1 (General MIDI Message)
03H	Sub ID#2 (General MIDI 2 On)
F7H	EOX (End Of Exclusive)

* When this message is received, this instrument will be able to receive the messages specified by General MIDI 2, and use the General MIDI 2 soundmap.
* There must be an interval of at least 50 ms between this message and the next.

●Universal Realtime System Exclusive Messages

○ Master Volume

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 01H, llH, mmH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (universal realtime message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control messages)
01H	Sub ID#2 (Master Volume)
llH	Master volume lower byte
mmH	Master volume upper byte
F7H	EOX (End Of Exclusive)

llH: ignored (processed as 00H)
mmH: 00H–7FH 0–127

* The lower byte (llH) of Master Volume will be handled as 00H.

○ Master Fine Tuning

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 03H, llH, mmH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (Universal Realtime Message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
03H	Sub ID#2 (Master Fine Tuning)
llH	Master Fine Tuning LSB
mmH	Master Fine Tuning MSB
F7H	EOX (End Of Exclusive)

llH, mmH: 00 00H–40 00H–7F 7FH (-100–0–+99.9 [cents])

○ Master Coarse Tuning

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 04H, llH, mmH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (Universal Realtime Message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
04H	Sub ID#2 (Master Coarse Tuning)
llH	Master Coarse Tuning LSB
mmH	Master Coarse Tuning MSB
F7H	EOX (End Of Exclusive)

llH: ignored (processed as 00H)
mmH: 28H–40H–58H (-24–0–+24 [semitones])

●Global Parameter Control

Parameters of the Global Parameter Control are newly provided for the General MIDI 2.

○ Reverb Parameters

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 05H, 01H, 01H, 01H, 01H, 01H, ppH, vvH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (Universal Realtime Message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
05H	Sub ID#2 (Global Parameter Control)
01H	Slot path length
01H	Parameter ID width
01H	Value width
01H	Slot path MSB
01H	Slot path LSB (Effect 0101: Reverb)
ppH	Parameter to be controlled.
vvH	Value for the parameter.
F7H	EOX (End Of Exclusive)

pp=0	Reverb Type	
	vv = 00H	Small Room (Room1)
	vv = 01H	Medium Room (Room2)
	vv = 02H	Large Room (Room3)
	vv = 03H	Medium Hall (Hall1)
	vv = 04H	Large Hall (Hall2)
	vv = 08H	Plate (Plate)
pp=1	Reverb Time	
	vv = 00H–7FH	0–127

○ Chorus Parameters

Status	Data byte	Status
F0H	7FH, 7FH, 04H, 05H, 01H, 01H, 01H, 01H, 02H, ppH, vvH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (Universal Realtime Message)
7FH	Device ID (Broadcast)
04H	Sub ID#1 (Device Control)
05H	Sub ID#2 (Global Parameter Control)
01H	Slot path length
01H	Parameter ID width
01H	Value width
01H	Slot path MSB
02H	Slot path LSB (Effect 0102: Chorus)
ppH	Parameter to be controlled.
vvH	Value for the parameter.
F7H	EOX (End Of Exclusive)

pp=0	Chorus Type	
	vv = 00H	Chorus1
	vv = 01H	Chorus2
	vv = 02H	Chorus3
	vv = 03H	Chorus4
	vv = 04H	FB Chorus
	vv = 05H	Flanger
pp=1	Mod Rate	
	vv= 00H–7FH	0–127
pp=2	Mod Depth	
	vv = 00H–7FH	0–127
pp=3	Feedback	
	vv = 00H–7FH	0–127
pp=4	Send To Reverb	
	vv = 00H–7FH	0–127

○ Channel Pressure

Status	Data byte	Status
F0H	7FH, 7FH, 09H, 01H, 0nH, ppH, rrH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (Universal Realtime Message)
7FH	Device ID (Broadcast)
09H	Sub ID#1 (Controller Destination Setting)
01H	Sub ID#2 (Channel Pressure)
0nH	MIDI Channel (00H–0FH)
ppH	Controlled parameter
rrH	Controlled range
F7H	EOX (End Of Exclusive)

pp=0	Pitch Control	
	rr = 28H–58H	-24–+24 [semitones]
pp=1	Filter Cutoff Control	
	rr = 00H–7FH	-9600–+9450 [cents]
pp=2	Amplitude Control	
	rr = 00H–7FH	0–200 [%]
pp=3	LFO Pitch Depth	
	rr = 00H–7FH	0–600 [cents]
pp=4	LFO Filter Depth	
	rr = 00H–7FH	0–2400 [cents]
pp=5	LFO Amplitude Depth	
	rr = 00H–7FH	0–100 [%]

○ Controller

Status	Data byte	Status
F0H	7FH, 7FH, 09H, 03H, 0nH, ccH, ppH, rrH	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (Universal Realtime Message)
7FH	Device ID (Broadcast)
09H	Sub ID#1 (Controller Destination Setting)
03H	Sub ID#2 (Control Change)
0nH	MIDI Channel (00H–0FH)
ccH	Controller number (00–1FH, 40–5FH)
ppH	Controlled parameter
rrH	Controlled range
F7H	EOX (End Of Exclusive)

pp=0	Pitch Control	
	rr = 28H–58H	-24–+24 [semitones]
pp=1	Filter Cutoff Control	
	rr = 00H–7FH	-9600–+9450 [cents]
pp=2	Amplitude Control	
	rr = 00H–7FH	0–200 [%]
pp=3	LFO Pitch Depth	
	rr = 00H–7FH	0–600 [cents]
pp=4	LFO Filter Depth	
	rr = 00H–7FH	0–2400 [cents]
pp=5	LFO Amplitude Depth	
	rr = 00H–7FH	0–100 [%]

○ Scale/Octave Tuning Adjust

Status	Data byte	Status
F0H	7EH, 7FH, 08H, 08H, ffH, ggH, hhH, ssH...	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
7FH	Device ID (Broadcast)
08H	Sub ID#1 (MIDI Tuning Standard)
08H	Sub ID#2 (scale/octave tuning 1-byte form)
ffH	Channel/Option byte1 bits 0 to 1 = channel 15 to 16 bits 2 to 6 = Undefined
ggH	Channel byte2 bits 0 to 6 = channel 8 to 14
hhH	Channel byte3 bits 0 to 6 = channel 1 to 7
ssH	12 byte tuning offset of 12 semitones from C to B 00H = -64 [cents] 40H = 0 [cents] (equal temperament) 7FH = +63 [cents]
F7H	EOX (End Of Exclusive)

○ Key-Based Instrument Controllers

Status	Data byte	Status
F0H	7FH, 7FH, 0AH, 01H, 0nH, kkH, nnH, vvH...	F7H

Byte	Explanation
F0H	Exclusive status
7FH	ID number (Universal Realtime Message)
7FH	Device ID (Broadcast)
0AH	Sub ID#1 (Key-Based Instrument Control)
01H	Sub ID#2 (Controller)
0nH	MIDI Channel (00–0FH)
kkH	Key Number
nnH	Controller Number
vvH	Value
F7H	EOX (End Of Exclusive)

nn=07H	Level	
	vv = 00H–7FH	0–200 [%] (Relative)
nn=0AH	Pan	
	vv = 00H–7FH	Left–Right (Absolute)
nn=5BH	Reverb Send	
	vv = 00H–7FH	0–127 (Absolute)
nn=5DH	Chorus Send	
	vv = 00H–7FH	0–127 (Absolute)

* This parameter effects drum instruments only.

●Universal Non-realtime System Exclusive Messages

○ Identity Request Message

Status	Data byte	Status
F0H	7EH, 10H, 06H, 01H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	Sub ID#1 (General Information)
01H	Sub ID#2 (Identity Request)
F7H	EOX (End Of Exclusive)

* Device ID = 10H or 7FH

2. Transmit Data

■ Channel Voice Messages

●Note Off

Status	2nd byte	3rd byte
8nH	kkH	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
kk = note number: 00H–7FH (0–127)
vv = note off velocity: 00H–7FH (0–127)

●Note On

Status	2nd byte	3rd byte
9nH	kkH	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
kk = note number: 00H–7FH (0–127)
vv = note on velocity: 01H–7FH (1–127)

●Control Change

○ Bank Select (Controller Number 0, 32)

Status	2nd byte	3rd byte
BnH	00H	mmH
BnH	20H	llH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
mm, ll = Bank number: 00H, 00H–7FH, 7FH (bank.1–bank.16384)

○ Volume (Controller Number 7)

Status	2nd byte	3rd byte
BnH	07H	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Volume: 00H–7FH (0–127), Initial Value = 64H (100)

○ Expression (Controller Number 11)

Status	2nd byte	3rd byte
BnH	0BH	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Expression: 00H–7FH (0–127), Initial Value = 7FH (127)

○ Hold 1 (Controller Number 64)

Status	2nd byte	3rd byte
BnH	40H	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Control value: 00H–7FH (0–127)

○ Sostenuto (Controller Number 66)

Status	2nd byte	3rd byte
BnH	42H	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Control value: 00H-7FH (0-127)
0 = OFF, 127 = ON

○ Soft (Controller Number 67)

Status	2nd byte	3rd byte
BnH	43H	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Control value: 00H–7FH (0–127)

○ Effect 1 (Reverb Send Level) (Controller Number 91)

Status	2nd byte	3rd byte
BnH	5BH	vvH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
vv = Control value: 00H–7FH (0–127)

●Program Change

Status	2nd byte
CnH	ppH

n = MIDI channel number: 0H–FH (ch.1–ch.16)
pp = Program number: 00H–7FH (prog.1–prog.128)

■ System Exclusive Messages

○ Identity Reply

LX-17

Status	Data byte	Status
F0H	7EH, 10H, 06H, 02H, 41H, 19H, 03H, 00H, 00H, 00H, 01H, 00H, 00H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
19H	Device family code (LSB)
03H	Device family code (MSB)
00H	Device family number code (LSB)
00H	Device family number code (MSB)
00H	Software revision level
01H	Software revision level
00H	Software revision level
00H	Software revision level
F7H	EOX (End of Exclusive)

LX-7

Status	Data byte	Status
F0H	7EH, 10H, 06H, 02H, 41H, 19H, 03H, 00H, 00H, 01H, 01H, 00H, 00H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
19H	Device family code (LSB)
03H	Device family code (MSB)
00H	Device family number code (LSB)
00H	Device family number code (MSB)
01H	Software revision level
01H	Software revision level
00H	Software revision level
00H	Software revision level
F7H	EOX (End of Exclusive)

HP605

Status	Data byte	Status
F0H	7EH, 10H, 06H, 02H, 41H, 19H, 03H, 00H, 00H, 02H, 01H, 00H, 00H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
19H	Device family code (LSB)
03H	Device family code (MSB)
00H	Device family number code (LSB)
00H	Device family number code (MSB)
02H	Software revision level
01H	Software revision level
00H	Software revision level
00H	Software revision level
F7H	EOX (End of Exclusive)

HP603 / HP603A

Status	Data byte	Status
F0H	7EH, 10H, 06H, 02H, 41H, 19H, 03H, 00H, 00H, 03H, 01H, 00H, 00H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
19H	Device family code (LSB)
03H	Device family code (MSB)
00H	Device family number code (LSB)
00H	Device family number code (MSB)
03H	Software revision level
01H	Software revision level
00H	Software revision level
00H	Software revision level
F7H	EOX (End of Exclusive)

KF-10

Status	Data byte	Status
F0H	7EH, 10H, 06H, 02H, 41H, 19H, 03H, 00H, 00H, 08H, 01H, 00H, 00H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
19H	Device family code (LSB)
03H	Device family code (MSB)
00H	Device family number code (LSB)
00H	Device family number code (MSB)
08H	Software revision level
01H	Software revision level
00H	Software revision level
00H	Software revision level
F7H	EOX (End of Exclusive)

GP607

Status	Data byte	Status
F0H	7EH, 10H, 06H, 02H, 41H, 19H, 03H, 00H, 00H, 09H, 01H, 00H, 00H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
19H	Device family code (LSB)
03H	Device family code (MSB)
00H	Device family number code (LSB)
00H	Device family number code (MSB)
09H	Software revision level
01H	Software revision level
00H	Software revision level
00H	Software revision level
F7H	EOX (End of Exclusive)

MIDI Implementation

DP603

Status	Data byte	Status
F0H	7EH, 10H, 06H, 02H, 41H, 19H, 03H, 00H, 00H, 0AH, 01H, 00H, 00H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
19H	Device family code (LSB)
03H	Device family code (MSB)
00H	Device family number code (LSB)
00H	Device family number code (MSB)
0AH	Software revision level
01H	Software revision level
00H	Software revision level
00H	Software revision level
F7H	EOX (End of Exclusive)

FP-10

Status	Data byte	Status
F0H	7EH, 10H, 06H, 02H, 41H, 19H, 03H, 00H, 00H, 10H, 01H, 00H, 00H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
19H	Device family code (LSB)
03H	Device family code (MSB)
00H	Device family number code (LSB)
00H	Device family number code (MSB)
10H	Software revision level
01H	Software revision level
00H	Software revision level
00H	Software revision level
F7H	EOX (End of Exclusive)

HP601

Status	Data byte	Status
F0H	7EH, 10H, 06H, 02H, 41H, 19H, 03H, 00H, 00H, 0DH, 01H, 00H, 00H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
19H	Device family code (LSB)
03H	Device family code (MSB)
00H	Device family number code (LSB)
00H	Device family number code (MSB)
0DH	Software revision level
01H	Software revision level
00H	Software revision level
00H	Software revision level
F7H	EOX (End of Exclusive)

RP102

Status	Data byte	Status
F0H	7EH, 10H, 06H, 02H, 41H, 19H, 03H, 00H, 00H, 0CH, 01H, 00H, 00H	F7H

Byte	Explanation
F0H	Exclusive status
7EH	ID number (Universal Non-realtime Message)
10H	Device ID
06H	Sub ID#1 (General Information)
02H	Sub ID#2 (Identity Reply)
41H	ID number (Roland)
19H	Device family code (LSB)
03H	Device family code (MSB)
00H	Device family number code (LSB)
00H	Device family number code (MSB)
0CH	Software revision level
01H	Software revision level
00H	Software revision level
00H	Software revision level
F7H	EOX (End of Exclusive)

3. Supplementary Material

●Decimal and Hexadecimal Table

In MIDI documentation, data values and addresses/sizes of exclusive messages etc. are expressed as hexadecimal values for each 7 bits.
The following table shows how these correspond to decimal numbers.

D	H	D	H	D	H	D	H
0	00H	32	20H	64	40H	96	60H
1	01H	33	21H	65	41H	97	61H
2	02H	34	22H	66	42H	98	62H
3	03H	35	23H	67	43H	99	63H
4	04H	36	24H	68	44H	100	64H
5	05H	37	25H	69	45H	101	65H
6	06H	38	26H	70	46H	102	66H
7	07H	39	27H	71	47H	103	67H
8	08H	40	28H	72	48H	104	68H
9	09H	41	29H	73	49H	105	69H
10	0AH	42	2AH	74	4AH	106	6AH
11	0BH	43	2BH	75	4BH	107	6BH
12	0CH	44	2CH	76	4CH	108	6CH
13	0DH	45	2DH	77	4DH	109	6DH
14	0EH	46	2EH	78	4EH	110	6EH
15	0FH	47	2FH	79	4FH	111	6FH
16	10H	48	30H	80	50H	112	70H
17	11H	49	31H	81	51H	113	71H
18	12H	50	32H	82	52H	114	72H
19	13H	51	33H	83	53H	115	73H
20	14H	52	34H	84	54H	116	74H
21	15H	53	35H	85	55H	117	75H
22	16H	54	36H	86	56H	118	76H
23	17H	55	37H	87	57H	119	77H
24	18H	56	38H	88	58H	120	78H
25	19H	57	39H	89	59H	121	79H
26	1AH	58	3AH	90	5AH	122	7AH
27	1BH	59	3BH	91	5BH	123	7BH
28	1CH	60	3CH	92	5CH	124	7CH
29	1DH	61	3DH	93	5DH	125	7DH
30	1EH	62	3EH	94	5EH	126	7EH
31	1FH	63	3FH	95	5FH	127	7FH

D: decimal
H: hexadecimal

* Decimal values such as MIDI channel, bank select, and program change are listed as one (1) greater than the values given in the above table.
* A 7-bits byte can express data in the range of 128 steps. For data where greater precision is required, we must use two or more bytes. For example, two hexadecimal numbers aa bbH expressing two 7-bits bytes would indicate a value of aa x 128 + bb.
* In the case of values which have a ± sign, 00H = -64, 40H = ±0, and 7FH = +63, so that the decimal expression would be 64 less than the value given in the above chart. In the case of two types, 00 00H = -8192, 40 00H = ±0, and 7F 7FH = +8191. For example if aa bbH were expressed as decimal, this would be aa bbH - 40 00H = aa x 128 + bb - 64 x 128.
* Data marked "nibbled" is expressed in hexadecimal in 4-bits units. A value expressed as a 2-byte nibble 0a 0bH has the value of a x 16 + b.

<Example 1>
What is the decimal expression of 5AH?
>From the preceding table, 5AH = 90

<Example 2>
What is the decimal expression of the value 12 34H given as hexadecimal for each 7 bits?
>From the preceding table, since 12H = 18 and 34H = 52
18 x 128 + 52 = 2356

<Example 3>
What is the decimal expression of the nibbled value 0A 03 09 0D?
>From the preceding table, since 0AH = 10, 03H = 3, 09H = 9, 0DH = 13
((10 x 16 + 3) x 16 + 9) x 16 + 13 = 41885

<Example 4>
What is the nibbled expression of the decimal value 1258?

```
16) 1258
16)   78... 10
16)    4... 14
        0... 4
```

Since from the preceding table, 0 = 00H, 4 = 04H, 14 = 0EH, 10 = 0AH, the answer is 00 04 0E 0AH.

●Examples of Actual MIDI Messages

<Example 1> 92 3E 5F
9n is the Note-on status, and n is the MIDI channel number. Since 2H = 2, 3EH = 62, and 5FH = 95, this is a Note-on message with MIDI CH = 3, note number 62 (note name is D4), and velocity 95.

<Example 2> CE 49
CnH is the Program Change status, and n is the MIDI channel number. Since EH = 14 and 49H = 73, this is a Program Change message with MIDI CH = 15, program number 74 (Flute in GS).

<Example 3> EA 00 28
EnH is the Pitch Bend Change status, and n is the MIDI channel number. The 2nd byte (00H = 0) is the LSB and the 3rd byte (28H = 40) is the MSB, but Pitch Bend Value is a signed number in which 40 00H (= 64 x 128 + 0 = 8192) is 0, so this Pitch Bend Value is 28 00H - 40 00H = 40 x 128 + 0 - (64 x 128 + 0) = 5120 - 8192 = -3072

If the Pitch Bend Sensitivity is set to 2 semitones, -8192 (00 00H) will cause the pitch to change 200 cents, so in this case -200 x (-3072) / (-8192) = -75 cents of Pitch Bend is being applied to MIDI channel 11.

<Example 4> B3 64 00 65 00 06 0C 26 00 64 7F 65 7F
BnH is the Control Change status, and n is the MIDI channel number. For Control Changes, the 2nd byte is the controller number, and the 3rd byte is the value. In a case in which two or more messages consecutive messages have the same status, MIDI has a provision called "running status" which allows the status byte of the second and following messages to be omitted. Thus, the above messages have the following meaning.

B3	64 00	MIDI ch.4, lower byte of RPN parameter number: 00H
(B3)	65 00	(MIDI ch.4) upper byte of RPN parameter number: 00H
(B3)	06 0C	(MIDI ch.4) upper byte of parameter value: 0CH
(B3)	26 00	(MIDI ch.4) lower byte of parameter value: 00H
(B3)	64 7F	(MIDI ch.4) lower byte of RPN parameter number: 7FH
(B3)	65 7F	(MIDI ch.4) upper byte of RPN parameter number: 7FH

In other words, the above messages specify a value of 0C 00H for RPN parameter number 00 00H on MIDI channel 4, and then set the RPN parameter number to 7F 7FH.

RPN parameter number 00 00H is Pitch Bend Sensitivity, and the MSB of the value indicates semitone units, so a value of 0CH = 12 sets the maximum pitch bend range to +/- 12 semitones (1 octave). (On GS sound sources the LSB of Pitch Bend Sensitivity is ignored, but the LSB should be transmitted anyway (with a value of 0) so that operation will be correct on any device.)

Once the parameter number has been specified for RPN, all Data Entry messages transmitted on that same channel will be valid, so after the desired value has been transmitted, it is a good idea to set the parameter number to 7F 7FH to prevent accidents. This is the reason for the (B3) 64 7F (B3) 65 7F at the end.

It is not desirable for performance data (such as Standard MIDI File data) to contain many events with running status as given in <Example 4>. This is because if playback is halted during the song and then rewound or fast-forwarded, the sequencer may not be able to transmit the correct status, and the sound source will then misinterpret the data. Take care to give each event its own status.

It is also necessary that the RPN parameter number setting and the value setting be done in the proper order. On some sequencers, events occurring in the same (or consecutive) clock may be transmitted in an order different than the order in which they were received. For this reason it is a good idea to slightly skew the time of each event (about 1 tick for TPQN = 96, and about 5 ticks for TPQN = 480).

* TPQN: Ticks Per Quarter Note

●About Tuning

In MIDI, individual Parts are tuned by sending RPN #1 (Master Fine Tuning) to the appropriate MIDI channel.
In MIDI, all parts can be tuned by sending RPN#1 to each of the MIDI channels that you are using.
RPN#1 allows you to specify the tuning with an accuracy of approximately 0.012 cents (to be precise, 100/8192 cents).
One cent is 1/100th of a semitone.

Frequently used tuning values are given in the following table for your reference.
Values are in hexadecimal (decimal in parentheses).

Hz in A4	cent	RPN #1
445.0	+19.56	4C 43 (+1603)
444.0	+15.67	4A 03 (+1283)
443.0	+11.76	47 44 (+ 964)
442.0	+7.85	45 03 (+ 643)
441.0	+3.93	42 42 (+ 322)
440.0	0.00	40 00 (0)
439.0	-3.94	3D 3D (- 323)
438.0	-7.89	3A 7A (- 646)

<Example> Set the tuning of MIDI channel 3 to A4 = 442.0 Hz

Send RPN#1 to MIDI channel 3. From the above table, the value is 45 03H.

B2	64 01	MIDI ch.3, lower byte of RPN parameter number: 01H
(B2)	65 00	(MIDI ch.3) upper byte of RPN parameter number: 00H
(B2)	06 45	(MIDI ch.3) upper byte of parameter value: 45H
(B2)	26 03	(MIDI ch.3) lower byte of parameter value: 03H
(B2)	64 7F	(MIDI ch.3) lower byte of RPN parameter number: 7FH
(B2)	65 7F	(MIDI ch.3) upper byte of RPN parameter number: 7FH

4. Tone List

LX-17 / LX-7 / HP605 / HP603 / GP607 / DP603 / HP603A / HP601

No.	Name	MSB	LSB	PC
Piano				
1	Concert Piano	0	68	1
2	Ballad Piano	16	67	1
3	Mellow Piano	4	64	1
4	Bright Piano	8	66	2
E.Piano				
1	Tremolo EP	0	69	5
2	Pop EP	16	67	5
3	Vintage EP	0	67	5
4	FM E.Piano	0	70	6
5	EP Belle	8	68	6
6	'60s EP	24	65	5
7	Clav.	0	67	8
8	Stage Phaser	0	68	5
9	'70s EP	16	66	5
10	E.Grand	0	69	3
Organ				
1	Pipe Organ	8	70	20
2	Nason flt 8'	16	66	20
3	Combo Jz.Org	0	70	19
4	Ballad Organ	0	69	19
5	ChurchOrgan1	0	66	20
6	ChurchOrgan2	8	69	20
7	Gospel Spin	0	71	17
8	Full Stops	0	69	17
9	Mellow Bars	32	68	17
10	Light Organ	32	69	17
11	Lower Organ	0	66	17
12	'60s Organ	16	64	17
Strings				
1	SymphonicStr1	1	67	50
2	Epic Strings	1	67	49
3	Rich Strings	0	71	50
4	Orchestra Str	0	64	49
5	Orchestra	8	66	49
6	Chamber Winds	0	67	69
7	Harp	0	68	47
8	Violin	0	0	41
9	Velo Strings	1	65	49
10	Flute	0	64	74
11	Cello	0	0	43
12	OrchestraBrs	1	66	61
13	Pizzicato Str	0	0	46
14	SymphonicStr2	1	65	50
15	Soft Pad	0	64	90
16	Magical Piano	47	65	3
17	Jazz Scat	0	65	55
18	A. Bass+Cymbl	0	66	33
Upright				
1	Upright Piano	16	64	1
2	Mellow Upright	1	65	1
3	Bright Upright	1	66	1
4	Rock Piano	8	64	3
5	Ragtime Piano	0	64	4
Classical				
6	Fortepiano	2	64	1
7	Mellow Forte	2	65	1
8	Bright Forte	2	66	1
9	Harpsichord	0	67	7
10	Harpsi 8'+4'	8	67	7
Drums				
11	STANDARD Set	120	0	1
12	ROOM Set	120	0	9
13	POWER Set	120	0	17
14	ELEC.Set	120	0	25
15	ANALOG Set	120	0	26
16	JAZZ Set	120	0	33
17	BRUSH Set	120	0	41
18	ORCH.Set	120	0	49
19	SFX Set	120	0	57
GM2				
20	Piano 1	121	0	1
21	Piano 1w	121	1	1
22	Piano 1d	121	2	1
23	Piano 2	121	0	2
24	Piano 2w	121	1	2
25	Piano 3	121	0	3
26	Piano 3w	121	1	3
27	Honky-tonk	121	0	4
28	Honky-tonk w	121	1	4
29	E.Piano 1	121	0	5
30	Detuned EP 1	121	1	5
31	Vintage EP	121	2	5
32	'60s E.Piano	121	3	5
33	E.Piano 2	121	0	6
34	Detuned EP 2	121	1	6
35	St.FM EP	121	2	6
36	EP Legend	121	3	6
37	EP Phase	121	4	6
38	Harpsi.	121	0	7
39	Coupled Hps.	121	1	7
40	Harpsi.w	121	2	7
41	Harpsi.o	121	3	7
42	Clav.	121	0	8
43	Pulse Clav.	121	1	8
44	Celesta	121	0	9
45	Glockenspiel	121	0	10
46	Music Box	121	0	11
47	Vibraphone	121	0	12
48	Vibraphone w	121	1	12
49	Marimba	121	0	13
50	Marimba w	121	1	13
51	Xylophone	121	0	14
52	TubularBells	121	0	15
53	Church Bell	121	1	15
54	Carillon	121	2	15
55	Santur	121	0	16
56	Organ 1	121	0	17
57	TremoloOrgan	121	1	17
58	'60s Organ	121	2	17
59	Organ 2	121	3	17
60	Perc.Organ 1	121	0	18
61	Chorus Organ	121	1	18
62	Perc.Organ 2	121	2	18
63	Rock Organ	121	0	19
64	Church Org.1	121	0	20
65	Church Org.2	121	1	20
66	Church Org.3	121	2	20

No.	Name	MSB	LSB	PC
67	Reed Organ	121	0	21
68	Puff Organ	121	1	21
69	Accordion 1	121	0	22
70	Accordion 2	121	1	22
71	Harmonica	121	0	23
72	Bandoneon	121	0	24
73	Nylon-str.Gt	121	0	25
74	Ukulele	121	1	25
75	Nylon Gt o	121	2	25
76	Nylon Gt 2	121	3	25
77	Steel-str.Gt	121	0	26
78	12-str.Gt	121	1	26
79	Mandolin	121	2	26
80	Steel+Body	121	3	26
81	Jazz Guitar	121	0	27
82	Hawaiian Gt	121	1	27
83	Clean Guitar	121	0	28
84	Chorus Gt 1	121	1	28
85	Mid Tone Gt	121	2	28
86	Muted Guitar	121	0	29
87	Funk Guitar1	121	1	29
88	Funk Guitar2	121	2	29
89	Chorus Gt 2	121	3	29
90	Overdrive Gt	121	0	30
91	Guitar Pinch	121	1	30
92	DistortionGt	121	0	31
93	Gt Feedback1	121	1	31
94	Dist.Rtm Gt	121	2	31
95	Gt Harmonics	121	0	32
96	Gt Feedback2	121	1	32
97	AcousticBass	121	0	33
98	FingeredBass	121	0	34
99	Finger Slap	121	1	34
100	Picked Bass	121	0	35
101	FretlessBass	121	0	36
102	Slap Bass 1	121	0	37
103	Slap Bass 2	121	0	38
104	Synth Bass 1	121	0	39
105	WarmSyn.Bass	121	1	39
106	Synth Bass 3	121	2	39
107	Clav.Bass	121	3	39
108	Hammer	121	4	39
109	Synth Bass 2	121	0	40
110	Synth Bass 4	121	1	40
111	RubberSyn.Bs	121	2	40
112	Attack Pulse	121	3	40
113	Violin	121	0	41
114	Slow Violin	121	1	41
115	Viola	121	0	42
116	Cello	121	0	43
117	Contrabass	121	0	44
118	Tremolo Str.	121	0	45
119	PizzicatoStr	121	0	46
120	Harp	121	0	47
121	Yang Qin	121	1	47
122	Timpani	121	0	48
123	Strings	121	0	49
124	Orchestra	121	1	49
125	'60s Strings	121	2	49
126	Slow Strings	121	0	50
127	Syn.Strings1	121	0	51
128	Syn.Strings3	121	1	51
129	Syn.Strings2	121	0	52
130	Choir 1	121	0	53
131	Choir 2	121	1	53
132	Voice	121	0	54
133	Humming	121	1	54
134	Synth Voice	121	0	55
135	Analog Voice	121	1	55
136	OrchestraHit	121	0	56
137	Bass Hit	121	1	56
138	6th Hit	121	2	56
139	Euro Hit	121	3	56
140	Trumpet	121	0	57
141	Dark Trumpet	121	1	57
142	Trombone 1	121	0	58
143	Trombone 2	121	1	58
144	Bright Tb	121	2	58
145	Tuba	121	0	59
146	MuteTrumpet1	121	0	60
147	MuteTrumpet2	121	1	60
148	French Horn1	121	0	61
149	French Horn2	121	1	61
150	Brass 1	121	0	62
151	Brass 2	121	1	62
152	Synth Brass1	121	0	63
153	Synth Brass3	121	1	63
154	AnalogBrass1	121	2	63
155	Jump Brass	121	3	63
156	Synth Brass2	121	0	64
157	Synth Brass4	121	1	64
158	AnalogBrass2	121	2	64
159	Soprano Sax	121	0	65
160	Alto Sax	121	0	66
161	Tenor Sax	121	0	67
162	Baritone Sax	121	0	68
163	Oboe	121	0	69
164	English Horn	121	0	70
165	Bassoon	121	0	71
166	Clarinet	121	0	72
167	Piccolo	121	0	73
168	Flute	121	0	74
169	Recorder	121	0	75
170	Pan Flute	121	0	76
171	Bottle Blow	121	0	77
172	Shakuhachi	121	0	78
173	Whistle	121	0	79
174	Ocarina	121	0	80
175	Square Lead1	121	0	81
176	Square Lead2	121	1	81
177	Sine Lead	121	2	81
178	Saw Lead 1	121	0	82
179	Saw Lead 2	121	1	82
180	Doctor Solo	121	2	82
181	Natural Lead	121	3	82
182	SequencedSaw	121	4	82
183	Syn.Calliope	121	0	83
184	Chiffer Lead	121	0	84
185	Charang	121	0	85
186	Wire Lead	121	1	85
187	Solo Vox	121	0	86
188	5th Saw Lead	121	0	87
189	Bass+Lead	121	0	88
190	Delayed Lead	121	1	88

No.	Name	MSB	LSB	PC
191	Fantasia	121	0	89
192	Warm Pad	121	0	90
193	Sine Pad	121	1	90
194	Polysynth	121	0	91
195	Space Voice	121	0	92
196	Itopia	121	1	92
197	Bowed Glass	121	0	93
198	Metallic Pad	121	0	94
199	Halo Pad	121	0	95
200	Sweep Pad	121	0	96
201	Ice Rain	121	0	97
202	Soundtrack	121	0	98
203	Crystal	121	0	99
204	Synth Mallet	121	1	99
205	Atmosphere	121	0	100
206	Brightness	121	0	101
207	Goblins	121	0	102
208	Echo Drops	121	0	103
209	Echo Bell	121	1	103
210	Echo Pan	121	2	103
211	Star Theme	121	0	104
212	Sitar 1	121	0	105
213	Sitar 2	121	1	105
214	Banjo	121	0	106
215	Shamisen	121	0	107
216	Koto	121	0	108
217	Taisho Koto	121	1	108
218	Kalimba	121	0	109
219	Bagpipe	121	0	110
220	Fiddle	121	0	111
221	Shanai	121	0	112
222	Tinkle Bell	121	0	113
223	Agogo	121	0	114
224	Steel Drums	121	0	115
225	Woodblock	121	0	116
226	Castanets	121	1	116
227	Taiko	121	0	117
228	Concert BD	121	1	117
229	Melodic Tom1	121	0	118
230	Melodic Tom2	121	1	118
231	Synth Drum	121	0	119
232	TR-808 Tom	121	1	119
233	Elec.Perc.	121	2	119
234	Reverse Cym.	121	0	120
235	Gt FretNoise	121	0	121
236	Gt Cut Noise	121	1	121
237	BsStringSlap	121	2	121
238	Breath Noise	121	0	122
239	Fl.Key Click	121	1	122
240	Seashore	121	0	123
241	Rain	121	1	123
242	Thunder	121	2	123
243	Wind	121	3	123
244	Stream	121	4	123
245	Bubble	121	5	123
246	Bird 1	121	0	124
247	Dog	121	1	124
248	Horse Gallop	121	2	124
249	Bird 2	121	3	124
250	Telephone 1	121	0	125
251	Telephone 2	121	1	125
252	DoorCreaking	121	2	125
253	Door	121	3	125
254	Scratch	121	4	125
255	Wind Chimes	121	5	125
256	Helicopter	121	0	126
257	Car Engine	121	1	126
258	Car Stop	121	2	126
259	Car Pass	121	3	126
260	Car Crash	121	4	126
261	Siren	121	5	126
262	Train	121	6	126
263	Jetplane	121	7	126
264	Starship	121	8	126
265	Burst Noise	121	9	126
266	Applause	121	0	127
267	Laughing	121	1	127
268	Screaming	121	2	127
269	Punch	121	3	127
270	Heart Beat	121	4	127
271	Footsteps	121	5	127
272	Gun Shot	121	0	128
273	Machine Gun	121	1	128
274	Laser Gun	121	2	128
275	Explosion	121	3	128

KF-10

No.	Name	MSB	LSB	PC
1	Concert Piano	0	68	1
2	Ballad Piano	16	67	1
3	Bright Piano	8	66	2
4	Upright Piano	16	64	1
5	Harpsichord	0	67	7
6	Tremolo EP	0	69	5

RP102

No.	Name	MSB	LSB	PC
1	Concert Piano	0	68	1
2	Ballad Piano	16	67	1
3	Mellow Piano	4	64	1
4	Bright Piano	8	66	2
5	Tremolo EP	0	69	5
6	Pop EP	16	67	5
7	Harpsichord	0	67	7
8	Celesta	121	0	9
9	Vibraphone	121	0	12
10	Pipe Organ	8	70	20
11	Combo Jz.Org	0	70	19
12	SymphonicStr1	1	67	50
13	Epic Strings	1	67	49
14	Soft Pad	0	64	90
15	Jazz Scat	0	65	55

FP-10

No.	Name	MSB	LSB	PC
1	Grand Piano 1	0	68	1
2	Grand Piano 2	16	67	1
3	Grand Piano 3	4	64	1
4	Grand Piano 4	8	66	2
5	E. Piano 1	16	67	5
6	E. Piano 2	0	70	6
7	Harpsichord 1	0	66	7
8	Harpsichord 2	8	66	7
9	Vibraphone	0	0	12
10	Jazz Organ 1	0	70	19
11	Church Organ 1	0	66	20
12	Strings 1	0	71	50
13	Strings 2	0	64	49
14	Synth Pad	0	64	90
15	Jazz Scat	0	65	55

Rhythm Set List

* - - - - -: No sound.
* [EXC]: will not sound simultaneously with other percussion instruments of the same number.

		STANDARD Set		ROOM Set		POWER Set		ELEC.Set	
	21	-----		-----		-----		-----	
	22	-----		-----		-----		-----	
	23	-----		-----		-----		-----	
C1	24	-----		-----		-----		-----	
	25	-----		-----		-----		-----	
	26	-----		-----		-----		-----	
	27	High-Q		High-Q		High-Q		High-Q	
	28	Slap		Slap		Slap		Slap	
	29	Scratch Push	[EXC7]	Scratch Push	[EXC7]	Scratch Push	[EXC7]	Scratch Push	[EXC7]
	30	Scratch Pull	[EXC7]	Scratch Pull	[EXC7]	Scratch Pull	[EXC7]	Scratch Pull	[EXC7]
	31	Sticks		Sticks		Sticks		Sticks	
	32	Square Click		Square Click		Square Click		Square Click	
	33	Metronome Click		Metronome Click		Metronome Click		Metronome Click	
	34	Metronome Bell		Metronome Bell		Metronome Bell		Metronome Bell	
	35	Kick Drum 2		Room Kick 2		Room Kick 1		Power Kick	
C2	36	Kick Drum 1		Room Kick 1		Power Kick		Electric Kick	
	37	Side Stick		Side Stick		Side Stick		Side Stick	
	38	Snare Drum		Room Snare		Power Snare		Electric Snare 1	
	39	Hand Clap		Hand Clap		Hand Clap		Hand Clap	
	40	Electric Snare 3		Electric Snare 4		Electric Snare 5		Electric Snare 2	
	41	Low Tom 2		Room Low Tom 2		Power Low Tom 2		Electric Low Tom 2	
	42	Closed Hi-Hat 1	[EXC1]	Closed Hi-Hat 2	[EXC1]	Closed Hi-Hat 2	[EXC1]	Closed Hi-Hat 2	[EXC1]
	43	Low Tom 1		Room Low Tom 1		Power Low Tom 1		Electric Low Tom 1	
	44	Pedal Hi-Hat 1	[EXC1]	Pedal Hi-Hat 2	[EXC1]	Pedal Hi-Hat 2	[EXC1]	Pedal Hi-Hat 2	[EXC1]
	45	Mid Tom 2		Room Mid Tom 2		Power Mid Tom 2		Electric Mid Tom 2	
	46	Open Hi-Hat 1	[EXC1]	Open Hi-Hat 2	[EXC1]	Open Hi-Hat 2	[EXC1]	Open Hi-Hat 2	[EXC1]
	47	Mid Tom 1		Room Mid Tom 1		Power Mid Tom 1		Electric Mid Tom 1	
C3	48	High Tom 2		Room High Tom 2		Power High Tom 2		Electric High Tom 2	
	49	Crash Cymbal 1		Crash Cymbal 3		Crash Cymbal 3		Crash Cymbal 3	
	50	High Tom 1		Room High Tom 1		Power High Tom 1		Electric High Tom 1	
	51	Ride Cymbal 1		Ride Cymbal 3		Ride Cymbal 3		Ride Cymbal 3	
	52	Chinese Cymbal 1		Chinese Cymbal 2		Chinese Cymbal 2		Reverse Cymbal	
	53	Ride Bell 1		Ride Bell 2		Ride Bell 2		Ride Bell 2	
	54	Tambourine		Tambourine		Tambourine		Tambourine	
	55	Splash Cymbal		Splash Cymbal		Splash Cymbal		Splash Cymbal	
	56	Cowbell		Cowbell		Cowbell		Cowbell	
	57	Crash Cymbal 2		Crash Cymbal 4		Crash Cymbal 4		Crash Cymbal 4	
	58	Vibraslap		Vibraslap		Vibraslap		Vibraslap	
	59	Ride Cymbal 2		Ride Cymbal4		Ride Cymbal4		Ride Cymbal4	
C4	60	High Bongo 1		High Bongo 2		High Bongo 2		High Bongo 2	
	61	Low Bongo 1		Low Bongo 2		Low Bongo 2		Low Bongo 2	
	62	Mute High Conga 1		Mute High Conga 2		Mute High Conga 2		Mute High Conga 2	
	63	Open High Conga		Open High Conga		Open High Conga		Open High Conga	
	64	Low Conga		Low Conga		Low Conga		Low Conga	
	65	High Timbale		High Timbale		High Timbale		High Timbale	
	66	Low Timbale		Low Timbale		Low Timbale		Low Timbale	
	67	High Agogo		High Agogo		High Agogo		High Agogo	
	68	Low Agogo		Low Agogo		Low Agogo		Low Agogo	
	69	Cabasa		Cabasa		Cabasa		Cabasa	
	70	Maracas		Maracas		Maracas		Maracas	
	71	Short High Whistle	[EXC2]	Short High Whistle	[EXC2]	Short High Whistle	[EXC2]	Short High Whistle	[EXC2]
C5	72	Long Low Whistle	[EXC2]	Long Low Whistle	[EXC2]	Long Low Whistle	[EXC2]	Long Low Whistle	[EXC2]
	73	Short Guiro	[EXC3]	Short Guiro	[EXC3]	Short Guiro	[EXC3]	Short Guiro	[EXC3]
	74	Long Guiro	[EXC3]	Long Guiro	[EXC3]	Long Guiro	[EXC3]	Long Guiro	[EXC3]
	75	Claves		Claves		Claves		Claves	
	76	High Woodblock		High Woodblock		High Woodblock		High Woodblock	
	77	Low Woodblock		Low Woodblock		Low Woodblock		Low Woodblock	
	78	Mute Cuica	[EXC4]	Mute Cuica	[EXC4]	Mute Cuica	[EXC4]	Mute Cuica	[EXC4]
	79	Open Cuica	[EXC4]	Open Cuica	[EXC4]	Open Cuica	[EXC4]	Open Cuica	[EXC4]
	80	Mute Triangle	[EXC5]	Mute Triangle	[EXC5]	Mute Triangle	[EXC5]	Mute Triangle	[EXC5]
	81	Open Triangle	[EXC5]	Open Triangle	[EXC5]	Open Triangle	[EXC5]	Open Triangle	[EXC5]
	82	Shaker		Shaker		Shaker		Shaker	
	83	Jingle Bell		Jingle Bell		Jingle Bell		Jingle Bell	
C6	84	Bell Tree		Bell Tree		Bell Tree		Bell Tree	
	85	Castanets		Castanets		Castanets		Castanets	
	86	Mute Surdo	[EXC6]	Mute Surdo	[EXC6]	Mute Surdo	[EXC6]	Mute Surdo	[EXC6]
	87	Open Surdo	[EXC6]	Open Surdo	[EXC6]	Open Surdo	[EXC6]	Open Surdo	[EXC6]
	88	-----		-----		-----		-----	

* - - - - -: No sound.
* [EXC]: will not sound simultaneously with other percussion instruments of the same number.

		ANALOG Set		JAZZ Set		BRUSH Set		ORCH.Set	
	21	-----		-----		-----		-----	
	22	-----		-----		-----		-----	
	23	-----		-----		-----		-----	
C1	24	-----		-----		-----		-----	
	25	-----		-----		-----		-----	
	26	-----		-----		-----		-----	
	27	High-Q		High-Q		High-Q		Closed Hi-Hat 2	[EXC1]
	28	Slap		Slap		Slap		Pedal Hi-Hat 2	[EXC1]
	29	Scratch Push	[EXC7]	Scratch Push	[EXC7]	Scratch Push	[EXC7]	Open Hi-Hat 2	[EXC1]
	30	Scratch Pull	[EXC7]	Scratch Pull	[EXC7]	Scratch Pull	[EXC7]	Ride Cymbal 3	
	31	Sticks		Sticks		Sticks		Sticks	
	32	Square Click		Square Click		Square Click		Square Click	
	33	Metronome Click		Metronome Click		Metronome Click		Metronome Click	
	34	Metronome Bell		Metronome Bell		Metronome Bell		Metronome Bell	
	35	TR-808 Kick 2		Room Kick 2		Room Kick 2		Concert Bass Drum 2	
C2	36	TR-808 Kick 1		Jazz Kick		Jazz Kick		Concert Bass Drum 1	
	37	TR-808 Rim shot		Side Stick		Side Stick		Side Stick	
	38	TR-808 Snare		Jazz Snare		Brush Tap		Concert Snare Drum	
	39	Hand Clap		Hand Clap		Brush Slap1		Castanets	
	40	Electric Snare 6		Electric Snare 7		Brush Swirl		Concert Snare Drum	
	41	TR-808 Low Tom 2		Jazz Low Tom		Brush Low Tom 2		Timpani F	
	42	TR-808 Closed Hi-Hat 1	[EXC1]	Closed Hi-Hat 2	[EXC1]	Brush Closed Hi-Hat	[EXC1]	Timpani F#	
	43	TR-808 Low Tom 1		Low Tom 1		Brush Low Tom 1		Timpani G	
	44	TR-808 Closed Hi-Hat 2	[EXC1]	Pedal Hi-Hat 2	[EXC1]	Brush Pedal Hi-Hat	[EXC1]	Timpani G#	
	45	TR-808 Mid Tom 2		Mid Tom 2		Brush Mid Tom 2		Timpani A	
	46	TR-808 Open Hi-Hat	[EXC1]	Open Hi-Hat 2	[EXC1]	Brush Open Hi-Hat	[EXC1]	Timpani A#	
	47	TR-808 Mid Tom 1		Jazz Mid Tom		Brush Mid Tom 1		Timpani B	
C3	48	TR-808 High Tom 2		Jazz High Tom 2		Brush High Tom 2		Timpani C	
	49	TR-808 Crash Cymbal		Crash Cymbal 3		Jazz Crash Cymbal		Timpani C#	
	50	TR-808 High Tom 1		Jazz High Tom 1		Brush High Tom 1		Timpani D	
	51	Ride Cymbal 3		Ride Cymbal 3		Jazz Ride Cymbal 1		Timpani D#	
	52	Chinese Cymbal 2		Chinese Cymbal 2		Chinese Cymbal 2		Timpani E	
	53	Ride Bell 2		Ride Bell 2		Jazz Ride Cymbal 2		Timpani F	
	54	Tambourine		Tambourine		Tambourine		Tambourine	
	55	Splash Cymbal		Splash Cymbal		Splash Cymbal		Splash Cymbal	
	56	TR-808 Cowbell		Cowbell		Cowbell		Cowbell	
	57	Crash Cymbal 4		Crash Cymbal 4		Crash Cymbal 4		Concert Cymbal 2	
	58	Vibraslap		Vibraslap		Vibraslap		Vibraslap	
	59	Ride Cymbal4		Ride Cymbal4		Ride Cymbal4		Concert Cymbal 1	
C4	60	High Bongo 2		High Bongo 2		High Bongo 2		High Bongo 2	
	61	Low Bongo 2		Low Bongo 2		Low Bongo 2		Low Bongo 2	
	62	TR-808 High Conga		Mute High Conga 2		Mute High Conga 2		Mute High Conga 2	
	63	TR-808 Mid Conga		Open High Conga		Open High Conga		Open High Conga	
	64	TR-808 Low Conga		Low Conga		Low Conga		Low Conga	
	65	High Timbale		High Timbale		High Timbale		High Timbale	
	66	Low Timbale		Low Timbale		Low Timbale		Low Timbale	
	67	High Agogo		High Agogo		High Agogo		High Agogo	
	68	Low Agogo		Low Agogo		Low Agogo		Low Agogo	
	69	Cabasa		Cabasa		Cabasa		Cabasa	
	70	TR-808 Maracas		Maracas		Maracas		Maracas	
	71	Short High Whistle	[EXC2]	Short High Whistle	[EXC2]	Short High Whistle	[EXC2]	Short High Whistle	[EXC2]
C5	72	Long Low Whistle	[EXC2]	Long Low Whistle	[EXC2]	Long Low Whistle	[EXC2]	Long Low Whistle	[EXC2]
	73	Short Guiro	[EXC3]	Short Guiro	[EXC3]	Short Guiro	[EXC3]	Short Guiro	[EXC3]
	74	Long Guiro	[EXC3]	Long Guiro	[EXC3]	Long Guiro	[EXC3]	Long Guiro	[EXC3]
	75	Claves		Claves		Claves		Claves	
	76	High Woodblock		High Woodblock		High Woodblock		High Woodblock	
	77	Low Woodblock		Low Woodblock		Low Woodblock		Low Woodblock	
	78	Mute Cuica	[EXC4]	Mute Cuica	[EXC4]	Mute Cuica	[EXC4]	Mute Cuica	[EXC4]
	79	Open Cuica	[EXC4]	Open Cuica	[EXC4]	Open Cuica	[EXC4]	Open Cuica	[EXC4]
	80	Mute Triangle	[EXC5]	Mute Triangle	[EXC5]	Mute Triangle	[EXC5]	Mute Triangle	[EXC5]
	81	Open Triangle	[EXC5]	Open Triangle	[EXC5]	Open Triangle	[EXC5]	Open Triangle	[EXC5]
	82	Shaker		Shaker		Shaker		Shaker	
	83	Jingle Bell		Jingle Bell		Jingle Bell		Jingle Bell	
C6	84	Bell Tree		Bell Tree		Bell Tree		Bell Tree	
	85	Castanets		Castanets		Castanets		Castanets	
	86	Mute Surdo	[EXC6]	Mute Surdo	[EXC6]	Mute Surdo	[EXC6]	Mute Surdo	[EXC6]
	87	Open Surdo	[EXC6]	Open Surdo	[EXC6]	Open Surdo	[EXC6]	Open Surdo	[EXC6]
	88	-----		-----		-----		Applause	

* - - - - -: No sound.
* [EXC]: will not sound simultaneously with other percussion instruments of the same number.

		SFX Set	
	21	-----	
	22	-----	
	23	-----	
C1	24	-----	
	25	-----	
	26	-----	
	27	-----	
	28	-----	
	29	-----	
	30	-----	
	31	-----	
	32	-----	
	33	-----	
	34	-----	
	35	-----	
C2	36	-----	
	37	-----	
	38	-----	
	39	High Q	
	40	Slap	
	41	Scratch Push	[EXC7]
	42	Scratch Pull	[EXC7]
	43	Sticks	
	44	Square Click	
	45	Metronome Click	
	46	Metronome Bell	
	47	Guitar Fret Noise	
C3	48	Guitar Cutting Noise Up	
	49	Guitar Cutting Noise Down	
	50	String Slap of Double Bass	
	51	Fl.Key Click	
	52	Laughing	
	53	Screaming	
	54	Punch	
	55	Heart Beat	
	56	Footsteps 1	
	57	Footsteps 2	
	58	Applause	
	59	Door Creaking	
C4	60	Door	
	61	Scratch	
	62	Wind Chimes	
	63	Car-Engine	
	64	Car-Stop	
	65	Car-Pass	
	66	Car-Crash	
	67	Siren	
	68	Train	
	69	Jet Plane	
	70	Helicopter	
	71	Starship	
C5	72	Gun Shot	
	73	Machine Gun	
	74	Laser Gun	
	75	Explosion	
	76	Dog	
	77	Horse-Gallop	
	78	Birds	
	79	Rain	
	80	Thunder	
	81	Wind	
	82	Seashore	
	83	Stream	
C6	84	Bubble	
	85	-----	
	86	-----	
	87	-----	
	88	-----	

Digital Piano
Model: LX-17/LX-7/HP605/HP603/
KF-10/GP607/DP603/HP603A/
HP601/RP102/FP-10

MIDI Implementation Chart

Date: Sep. 20. 2019
Version: 1.03

Function...		Transmitted	Recognized	Remarks
Basic	Default	1	1-16	
Channel	Changed	1-16	1-16	
	Default	Mode 3	Mode 3	
Mode	Messages	×	Mode 3-4 (M=1)	*1
	Altered	**********		
Note		15-113	0-127	
Number :	True Voice	**********	0-127	
Velocity	Note On	○	○	
	Note Off	○	○	
After	Key's	×	×	
Touch	Channel's	×	○	
Pitch Bend		×	○	
Control Change	0, 32	○	○	Bank select
	1	×	○	Modulation
	5	×	○	Portamento time
	6, 38	×	○	Data entry
	7	○	○	Volume
	10	×	○	Pan
	11	○	○	Expression
	64	○	○	Hold 1
	65	×	○	Portamento
	66	○	○	Sostenuto
	67	○	○	Soft
	71	×	○	Resonance
	72	×	○	Release Time
	73	×	○	Attack Time
	74	×	○	Cutoff
	75	×	○	Decay Time
	76	×	○	Vibrato Rate
	77	×	○	Vibrato Depth
	78	×	○	Vibrato Delay
	84	×	○	Portamento control
	91	○	○ (Reverb)	General purpose effects 1 depth
	93	×	○ (Chorus)	General purpose effects 3 depth
	100, 101	×	○	RPN LSB, MSB
Program		○	○	
Change	: True Number	**********	0-127	Program No. 1–128
System Exclusive		○	○	
System Common	: Song Position	×	×	
	: Song Select	×	×	
	: Tune Request	×	×	
System	: Clock	×	×	
Real Time	: Commands	×	×	
Aux Messages	: All Sound Off	×	○	
	: Reset All Controllers	×	○	
	: Local On/Off	×	×	
	: All Notes Off	×	○ (123-127)	
	: Active Sensing	×	×	
	: System Reset	×	×	
Notes		*1 Only M=1 is supported		

Mode 1 : OMNI ON, POLY
Mode 2 : OMNI ON, MONO
Mode 3 : OMNI OFF, POLY
Mode 4 : OMNI OFF, MONO

○ : Yes
× : No